ZEOLITE-BASED CERAMIC COMPONENTS THROUGH HYDROTHERMAL DRY SYNTHESIS

Alberto Conte, Industrial Engineering Dept., University of Padova, Italy
alberto.conte.7@phd.unipd.it
Alessandro Angeleri, ITT Italia srl, Italy
Francesco Vannucci, ITT Italia srl, Italy
Agusti Sin Xicola, ITT Italia srl, Italy
Paolo Colombo, Industrial Engineering Dept., University of Padova, Italy

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Zeolites are three-dimensional, microporous, crystalline solids with well-defined structures that contain aluminum, silicon and oxygen in their regular framework. Zeolites are generally formed in strong alkali solution (Na, K) and in hydrothermal conditions.

In this work, inorganic compacts were produced using an innovative approach, where kaolinite was directly converted into a zeolite structure through a hydrothermal synthesis without the addition of any water, and therefore in dry conditions. Zeolite-based components reinforced with fillers were also produced.
XRD analyses were conducted to confirm the formation of the desired phase. Strength and microstructure were evaluated to optimize the composition of the composites.

The zeolite-based components could replace fiber reinforced plastic in terms of thermal resistance. Moreover, this class of ceramic composites can be process with the same technology of thermosetting based composites.

References:

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